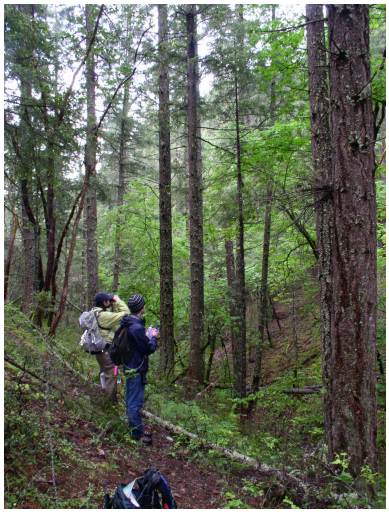
# Summary Report on Long-term Constant Effort Monitoring Station and Special Species Monitoring Efforts In the Klamath-Siskiyou Bioregion By the Klamath Bird Observatory in 2007

Robert I. Frey and John D. Alexander



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## Background

The Klamath Bird Observatory (KBO) continued its comprehensive, long-term bird monitoring program in the Klamath-Siskiyou Bioregion in 2007. The objectives of this program are to collect data that provide an index to species diversity and abundance in riparian and upland habitats, to evaluate the reproductive success and population health of Neotropical migratory and resident birds, to maintain a long-term monitoring effort for tracking landbird population trends, and to test methods for effectively monitoring special species.

The Klamath-Siskiyou Bioregion lies within the Partners in Flight (PIF) Pacific and Intermountain West Avifaunal Biomes. Our monitoring efforts are conducted within several habitat types of which PIF describes 45 focal species for which conservation and monitoring efforts should be targeted (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Tables 1*a*-1*c*). KBO's monitoring efforts are a major component of the Klamath Bird Monitoring Network, a regional program established in 1992 (Alexander et al. 2004). KBO works with partners in the Klamath-Siskiyou Bioregion to fulfill monitoring goals defined by the National PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998, Rich et al. 2004) and Oregon-Washington (Altman 1999, 2000, Altman and Bart 2000) and California PIF (CalPIF 2002, RHJV 2004) recommendations.

As a part of KBO's monitoring program we maintained long-term efforts to track population trends and demographics with constant effort mist netting stations, rapid ornithological inventories, breeding bird survey routes and extensive point count survey routes throughout the Bioregion. KBO also conducted various research efforts to evaluate the effects of land management projects on landbirds, and to test methods for monitoring special species (e.g., Black Terns, small owls, and Snowy Plovers). KBO continued development of its role as a support source for regional research and monitoring projects by providing technical assistance, training, and consultation to cooperating individuals, organizations, and agencies. This report provides a summary of 2007 constant effort mist netting station efforts, rapid ornithological inventories, special species monitoring, technical training, and banding-associated outreach efforts. The long-term monitoring point count efforts are documented in a separate report (Stephens and Alexander 2008).

## Monitoring at Constant-Effort Stations (CES)

KBO's long-term mist netting efforts are designed to provide distribution, abundance and demographic information. The methods are described in Ralph et al. (1993, 2004) and include mist net arrays, banding, area search and point count survey, vegetation survey, and soft tissue sampling (for DNA, stable isotope study and avian influenza monitoring). These methods are

consistent with recommendations of the PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998). KBO conducted integrated bird monitoring accordant to constant-effort station (CES) methodology at 18 locations during 2007, primarily at 16 CES in the Klamath-Siskiyou Bioregion. The CES efforts began during May, at the onset of the landbird breeding season in Oregon, and continued into October, inclusive of the fall migration. Our flagship CES at the Willow Wind Learning Center in Ashland, Oregon was operated throughout the year.

Each CES effort was scheduled for the five hours following sunrise (with the exceptions of the Wildlife Images (WIIM) and Applegate River (APRI) CES scheduled for six hours). Exact locations of the study sites were recorded in KBO's GIS database and the physical characteristics for each site described using a location and vegetation releve' survey method recommended by Ralph et al. (1993). We continued CES efforts at 14 CES sites that have been operated for 3-15 years. In May, KBO established a new CES site in the Ashland Watershed on the Rogue River National Forest. Also in May, we assumed operation of the long-running CES on the Applegate River within the BLM Provolt Seed Orchard. The Antelope Creek (ANT1) CES on the Klamath National Forest was not operated as a CES but rather with a rapid ornithological inventory (ROI; Ralph et al. 2004) effort in August. Written descriptions of all site localities are included (Table 2).

Combined totals from the 18 locations include 10,669 birds of 100 species, including five subspecies, captured during 14,899.3 net hours (number of 12 meter mist nets operated multiplied by time operated in hours). During 280 efforts, 591 area search surveys were completed with 877 person-days (Tables 3c, 4c). The methods used gathered distribution, abundance, and/or demographic information for these species, including many identified by PIF in continental and regional habitat conservation plans as priority or focal species (Altman 1999, 2000, CalPIF 2002, RHJV 2004, Rich et al. 2004; Table 1*a*-1*c*). Point count surveys were also conducted at CES sites during the breeding season, the efforts of which are described in a separate report (Stephens and Alexander 2007).

KBO's long-term monitoring CES efforts are conducted in a variety of habitat-types; however, in this report we have synthesized our effort results into two broadly distinct landscapes, ***Eastside Cascades Range and Klamath Basin*** and ***Westside Cascades and Klamath Ranges***), from the overall totals, in the interest of a clearer presentation. Site-specific habitat descriptions are available upon request.

***Eastside Cascade Range and Klamath Basin***

From 11 May through August (breeding season), all seven Eastside Cascades Range and Klamath Basin CES stations were scheduled once every 10-day period (Period 1 beginning 1 May). In September and October (migration season), all CES sites were scheduled and operated once per week, except for the Rocky Point cabin (CABN) station which was scheduled for an increased effort frequency of three per week.

At the seven eastern CES sites through the overall season, a total of 5,455 birds were captured in 6,419.2 net hours. A total of 248 area search surveys were conducted during the 128 banding efforts with 400 person days. The Sevenmile Guardhouse (7MIL) station had the highest total

captures (1,198 birds) and the highest capture rate, along with the Topsy Grade (TOPS) station (captures per net hour; both 1.2). The CABN station had the greatest average species richness (average species captured per visit over the season; 15.7) (Table 3c).

During the breeding season, a total of 3,109 birds were captured during 3,764.2 net hours. A total of 146 area search surveys were completed during 54 efforts with 240 person-days. The TOPS station had the highest total captures (628) and the highest capture rate (1.33). The CABN station had the greatest average species richness (17.1) (Table 3a).

During the fall migration season, a total of 2,346 birds were captured during 2,655.0 net hours. A total of 102 area search surveys were completed during 54 efforts with 160 person-days. The 7MIL station had the highest total captures (721) and capture rate (1.81). The CABN and TOPS stations had the greatest average species richness (14.4, 14.3) (Table 3b).

Several unusual species were encountered during CES efforts. On June 12, a Gray Catbird was captured at the Odessa Creek (ODES) station and determined to be a second-year (SY; hatched in 2006) of unknown sex. The catbird is considered rare in southern Oregon, although there is a breeding population in northeast Oregon's Blue Mountains (Contreras 2003). On June 21, a Black-and-White Warbler was captured at the ODES station, determined to be an after-hatch-year (AHY) male in probable breeding condition. The Black-and-White Warbler is a regular transient west of the Rocky Mountains (Nehls 2003a). On July 1, a Hooded Warbler was captured at our Topsy Grade (TOPS) station, determined to be a SY female. This individual was recaptured at the same location 11 days later. The Hooded Warbler is a regular transient and occasional breeder in the Pacific Northwest (Nehls 2003c). On July 2, a Brown Thrasher was captured at the Wood River Wetland (WOOD) station, determined to be an AHY of unknown sex. The Brown Thrasher is considered quite rare in Oregon with just a handful of previous records (Nehls 2003b).

***Westside Cascades and Klamath Ranges***

From 11 May through August (breeding season), all nine western CES sites were scheduled once per 10-day cycle (Period 1 beginning 1 May). The Quines Creek (QUIC) and Wildlife Images (WIIM) sites had an increased frequency of efforts scheduled for the fall migration season. Beginning the third week of August through the second week of October, the QUIC site was scheduled twice per week. Beginning September 1, the WIIM site was scheduled once per three-day cycle through October. All other sites were scheduled once per week beginning the first week of September through October. The Willow Wind (WIWI) site was scheduled year-round once per week outside of the breeding season.

At the nine western CES sites through the overall season, a total of 5,214 birds were captured in 8,480.2 net hours. A total of 343 area search surveys were conducted during the 152 banding efforts with 477 person days. The WIIM station had the highest total captures (1,271), although with a greater number of net hours than all but the WIWI station, as well as the second highest capture rate (captures per net hour; 0.8). The WIIM site also had the greatest average species richness (12.7 species captured per effort visit over the season), followed by the Horse Creek Meadow (HCME; 11.7) and Johnson Creek (JOHN; 11.3) stations (Table 4c).

During the breeding season, 2,294 birds were captured in 4,359.1 net hours. Area search surveys conducted totaled 181 in 70 banding efforts with 239 person-days. The WIIM station had the highest total captures (378) and the HCME station had the greatest average species richness (12.4) and capture rate (1.33) (Table 4a).

During the fall migration season, a total of 2,535 birds were captured during 3,465.4 net hours. Area search surveys conducted totaled 137 in 73 banding efforts with 187 person-days. The WIIM station, scheduled with an increased effort frequency, had the highest total captures (893) and greatest average species richness (13.0). The HCME station had the highest capture rate (1.49) (Table 4b). The WIWI site was operated year-round and provided KBO with valuable community volunteer training, environmental education and public outreach opportunities (see *Technical Training* and *Outreach and Education Integrated with Banding Efforts* below). Year-round monitoring at this site also provided early and late arrival information for migratory species in southern Oregon's Rogue Valley.

The most unusual species encountered at CES efforts in the Westside Cascades & Klamath Ranges region was a Swamp Sparrow captured 20 April at the WIWI station, determined to be an AHY of unknown sex. This species is widely distributed east of the Rocky Mountains in North America, but considered a rare to uncommon transient and winter visitant in western Oregon (Combs 2003).

**Rapid Ornithological Inventories**

KBO has been involved with developing and testing a rapid ornithological inventory (ROI) protocol which is designed to quickly and effectively collect abundance and demographic data of birds in a limited area in a constrained amount of time (Ralph et al. 2004). The inventory involves two days of intensive mist netting and surveying at a site. In 2007, KBO conducted one ROI at the former KBO CES Antelope Creek (ANT1) station 25-26 August (Table 3c).

**Special Species Monitoring**

In concordance with the recommendations of the National PIF Inventory and Monitoring Working Group, KBO has established special species monitoring programs for birds that are inadequately monitored by other programs or methods (Altman and Bart 2001, Shuford 1999). Our special species monitoring efforts are comprised of small owl capture and survey throughout the Klamath-Siskiyou Bioregion and Black Tern nesting colony surveys within the Klamath Basin.

*Small Owl Monitoring*

The goal of our small owl monitoring program has been two-fold: (1) To develop effective monitoring methods for this group of birds that are difficult to study; and (2) To build upon the limited body of knowledge of small owls in the Pacific Northwest. The target species of these efforts are Flammulated Owl, Western Screech-Owl, Northern Pygmy-Owl, and Northern Saw-whet Owl. Little is known about the distribution, population trends, demographic composition, and migration patterns of these birds in western North America. We have incorporated these

efforts into the ongoing CES efforts in the Klamath Bird Monitoring Network at appropriate stations since 2000. The small owl survey methods include audio and visual surveys as well as owl capture and banding. Both methods involve use of audio-lure, that is, the broadcast of vocalization recordings of targeted species in proximity to the survey point and mist net array. A small array of (2-4) mist nets were opened while the audio-lure was broadcast (central to the net array) while concurrent 20-minute surveys were conducted with all species encountered documented.

In 2007, KBO continued to compare two types of audio-lure use, by alternating broadcasts between a single-target species recording and a combined-species recording. There were seven netting efforts completed totaling 62.6 net hours, with no owl captures. A recurring problem encountered during most efforts was the presence of one of more Great-horned Owls, a predator of small owls, at many effort attempts. Our protocol mandates the termination of the audio-lure broadcasts and netting with the presence of a known predator.

*Black Tern Nest Colony Surveys*

In partnership, KBO and RSL have developed a Black Tern nest colony survey program in the Klamath Basin. Conducted since 1996, this monitoring effort involves visual surveys completed from shore, canoe, and boat. The surveys consist of routes containing 6-12 points that are mapped using GIS. The visual surveys include determination of behavior as indicative of nesting. During the tern surveys, all species observed are recorded.

During May through early July, 62 surveys were completed on 25 routes of 184 survey stations, for a total of 402 station surveys. These surveys were completed within 10 Black Tern monitoring areas on Agency Lake, Upper Klamath Lake, and Klamath Marsh. Nesting behavior was identified or suspected in 22 routes in the following survey areas: Crystal Springs, Eagle Point, Malone Springs, northwest shore Upper Klamath Lake, Odessa Creek and Marsh, Pelican Bay, Recreation Creek, Wocus Cut, and Wood River Wetland (Table 6).

*Snowy Plover Surveys*

In June 2007, KBO completed Snowy Plover surveys to assess the distribution and conservation status of the Snowy Plover breeding in Honey Lake and Surprise Valley, California. This work contributed to the US Fish and Wildlife Service's (USFWS) International Breeding Survey for Snowy Plovers in the U.S. and Mexico. The Snowy Plover is a species of high conservation concern in the National and Regional Shorebird Plans, State Wildlife Action Plans and a bird of conservation concern within the USFWS Regions throughout its range. Despite high conservation concern, there has never been a comprehensive survey to assess the distribution of this species, range-wide. This project is a necessary first step in furthering conservation actions for Snowy Plover. KBO technicians spent 8 survey days at Honey Lake completing 23 survey sites and 20 survey days at Surprise Valley completing 59 survey sites.

## Tissue Sampling

*Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project*

Since 1999, KBO has contributed to the University of California, Los Angeles' Center for Tropical Research's (CTR) Neotropical Migratory Bird Conservation Genetics and Stable Isotopes Project. The CTR is investigating the genetic structure of migratory bird populations in order to connect breeding areas in North America with wintering areas in Latin America and the Caribbean. This field of research seeks to determine the factors responsible for population declines of Neotropical songbirds that migrate between the Caribbean, Central America, Mexico, and North America. Using molecular genetic techniques (utilizing genetic material and stable isotopes obtained from a single feather from a bird), CTR researchers have been able to identify the breeding and wintering populations of songbirds. The CTR's findings will provide conservation biologists with the means of correlating habitat changes with the declining populations. Demographic data contributed by KBO and other monitoring programs are integral to the CTR's research efforts. In 2007, KBO collected and contributed just over 4,050 feather samples to this project.

*Avian Influenza Sampling*

In 2007, KBO contributed to international efforts to collect samples of avian influenza to identify transmission paths in North American migratory birds. Information derived from the samples will also be used to further the goal of developing Influenza A vaccines. Avian viruses are present within a bird's cloaca and are relatively simple to safely collect by swab insertion. The swab samples of skin cells and fecal matter are stored in a preservative, labeled and shipped to the CTR for processing and analysis. These efforts are coordinated by CTR in partnership with the Institute for Bird Populations' Monitoring Avian Productivity and Survivorship (MAPS) program and the Landbird Monitoring Network of the Americas (LaMNA). KBO met sampling goals set by the MAPS and LaMNA efforts with 800 birds sampled.

## Technical Training

Since the outset of its overall monitoring program, KBO has provided technical training in bird banding methods and bird conservation outreach and education opportunities at CES sites. KBO's monitoring program has always been integrated with our bird banding internship program, providing specialized training in the latest and most effective bird monitoring techniques for students and biologists. In addition to this on-going instruction, KBO has provided intensive bird banding techniques training at these sites during monitoring efforts for volunteers and professionals from the community, academia, and land management agencies.

In 2007, a total of 13 intern students, including five international students, received experiential instruction in advanced bird banding and survey techniques. The instruction is supplemented with study materials, published by the North American Banding Council, pertinent scientific literature, and regular seminars presented by KBO staff. Our international internship program is made possible through our partnerships with the Southern Oregon University International Studies Program and the NPS Park Flight Program. This year, KBO hosted student interns from

Colombia, Costa Rica, Jamaica, Mexico, and Peru, as well as eight recent college graduates from the United States. We also provided experiential training in banding techniques during monitoring efforts at CES sites to partnering biologists and volunteers. These professional-level training sessions totaled 15 person days.

A banding techniques workshop was presented in May for Klamath Bird Monitoring Network cooperators and other regional researchers at KBO's Upper Klamath Lake Field Station. Participants received instruction in advanced landbird ageing and sexing techniques, standard biometrics, mist net use and maintenance, outreach and education communication skills, and general field safety principles. The workshop was attended by 23 individuals.

In a celebration of community cooperation, KBO welcomed the contributions of several local volunteers of 31 person days assisting at Ashland-area stations while receiving training in banding skills. These individuals were especially involved in the winter months' operation of the WIWI station.

Toward the fulfillment of the North American Banding Council (NABC) mission of promoting sound and ethical banding principles and techniques, KBO coordinated five individual NABC Bander certification evaluation sessions and contributed to a group session in partnership with our affiliate, Humboldt Bay Bird Observatory, at Arcata, California. From these evaluations, seven of our interns were certified at the NABC Bander Assistant or Bander levels, with two certified at the Bander Trainer level.

**Outreach and Education Integrated with Banding Efforts**

The continuing monitoring efforts conducted by KBO have created many effective outreach and education opportunities that have reached hundreds of students, as well as many community members and KBO-partner representatives. KBO's overall education and outreach accomplishments were reported in the KBO Klamath Bird newsletter (Dayer 2008).

Bird banding provides a unique opportunity to educate the public and students about birds, their environment, and the connection between science and conservation. KBO's Education and Outreach team worked in concordance with its long-term monitoring efforts in creating many such academic and public outreach opportunities in 2007. Overall, over 1,200 people visited our banding sites during field trips, bird-walks, and demonstrations at CES and public parks. The WIWI and NMTP CES sites were especially active as outdoor classrooms and laboratories that are accessible. These sites' efforts were scheduled for school and community group outreach programs and presentations that involved 846 Kindergarten through 12th-grade students and teachers of regional schools. The majority of these schools participated in the Songbirds, Science, and Schools program (Dayer and Busch 2007). In July, KBO biologists and interns hosted two college student groups at the CABN and ODES stations. The first was an Evergreen State College (Washington) Field Ornithology class of 18 students and instructors, and the second 23 Mt. Hood Community College exchange biology students from several Central America countries. Discussion topics included bird capture, age- and sex-determination, and survey techniques, as well as use of such data to inform conservation and land management.

As part of the International Migratory Bird Day annual festivals at Ashland and Klamath Falls, KBO held public banding demonstrations 12 May. The Ashland demonstration was conducted at the City of Ashland Parks' North Mountain Park (NMTP). The Klamath Falls event was conducted at the City of Klamath Falls' Veteran's Park (VET1; Table 3c). Both of these events were well attended (KBO 2007). KBO biologists assisted Lava Beds National Monument biologists during a bird banding demonstration at the Tule Lake Migratory Bird Festival 19 May.

## Conclusion

The Klamath Bird Observatory's long-term bird monitoring program utilizes multiple methods, at a landscape level, to monitor bird populations during the breeding and fall migration seasons. Integral components of this monitoring program are technical training and outreach efforts. Our program includes lands that are managed by the U. S. Department of Agriculture (USDA) Forest Service, U.S. Department of Interior (USDI) Bureau of Land Management, USDI Fish and Wildlife Service, USDI Bureau of Reclamation, USDI National Park Service, and others. We are collecting data on population trends, habitat relationships, and demographic parameters throughout the Klamath-Siskiyou Bioregion in order to inform managers about important bird habitats and the effects of resource management practices on birds. Data resulting from these efforts are contributed to several databases including the U. S. Geological Survey North American Bird Banding Laboratory, the Institute for Bird Populations' MAPS program, the Klamath Bird Monitoring Network, LaMNA, CTR's migratory bird genetics and avian influenza projects, and Cornell Laboratory of Ornithology's Avian Knowledge Network.

In 2008, KBO will continue working with our partners to maintain this long-term monitoring program which fulfills monitoring objectives set forth by the National PIF Inventory and Monitoring Working Group (Hussell and Ralph 1998) and contributes toward accomplishment of our mission to advance bird and habitat conservation through science, education, and effective partnerships at the international, national, and local levels.

## Acknowledgements

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**Literature Cited**

Alexander, J. D., C. J. Ralph, K. Hollinger, and B. Hogoboom. 2004. Using a wide-scale Landbird monitoring network to determine landbird distribution and productivity in the Klamath Bioregion. Pp. 33-41 in K. L. Mergenthaler, J. E. Williams, and E. S. Jules (Eds.), Proceedings of the Second Conference on Klamath - Siskiyou Ecology. Copies available from Klamath Bird Observatory, PO Box 758, Ashland, Oregon, 97520.

Altman, B. 1999. Conservation strategy for landbirds in coniferous forests of western of Oregon and Washington. Oregon - Washington Partners in Flight. Copies available from Klamath Bird Observatory, PO Box 758, Ashland, Oregon, 97520.

Altman, B. 2000. Conservation strategy for landbirds of the east-slope of the Cascade Mountains in Oregon and Washington. Oregon - Washington Partners in Flight. Copies available from Klamath Bird Observatory, PO Box 758, Ashland, Oregon, 97520.

Altman, B. and J. Bart. 2001. Special species monitoring and assessment in Oregon and Washington: Landbird species not adequately monitored by the Breeding Bird Survey. Oregon – Washington Partners in Flight. *http://www.orwapif.org/pdf/special_monitoring.pdf*

CalPIF (California Partners in Flight). 2002. Version 1.0. The draft coniferous forest bird Conservation plan: a strategy for protecting and managing coniferous forest habitats and associated birds in California (J. Robinson and J. Alexander, lead authors).

Combs, B. 2003. Swamp Sparrow (Melospiza georgiana), in Birds of Oregon (D. B. Marshall, M. G. Hunter and A. L. Contreras, eds.), pp. 560-561. Oregon State Univ. Press, Corvallis, Oregon.

Contreras, A. L. 2003. Gray Catbird (Dumetella carolinensis), in Birds of Oregon (D. B. Marshall, M.G. Hunter and A.L. Contreras, eds.), pp. 491-492. Oregon State Univ. Press, Corvallis, Oregon.

Dayer, A. 2008. Education and outreach 2007 year in review. The Klamath Bird, Winter 2008. Klamath Bird Observatory. Ashland, Oregon. *http:www.klamathbird.org/Newsletter/Newsletter.htm*

Dayer, A. A. and A. Busch. 2007. Songbirds, science, and schools. Klamath Bird Observatory. Ashland, Oregon.

Hussell, D. J. T. and C. J. Ralph. 1998. Recommended methods for monitoring bird populations by counting and capture of migrants. Partners in Flight Inventory and Monitoring Working Group. *http://www.fs.fed.us/psw/topics/wildlife/birdmon/pif/migmon.shtml*

Nehls, H. B. 2003a. Black-and-White Warbler (Mniotilta varia), in Birds of Oregon (D. B. Marshall, M. G. Hunter and A. L. Contreras, eds.), p. 519. Oregon State Univ. Press, Corvallis, Oregon.

Nehls, H. B. 2003b. Brown Thrasher (Toxostoma rufum), in Birds of Oregon (D. B. Marshall, M. G. Hunter and A. L. Contreras, eds.), pp. 495-496. Oregon State Univ. Press, Corvallis, Oregon.

Nehls, H. B. 2003c. Hooded Warbler (Wilsonia citrina), in Birds of Oregon (D. B. Marshall, M. G. Hunter and A. L. Contreras, eds.), p. 526. Oregon State Univ. Press, Corvallis, Oregon.

Ralph, C. J., G. R. Geupel, P. Pyle, T. E. Martin, and D. F. DeSante. 1993. Handbook of field methods for monitoring landbirds. USDA Forest Service. Pacific Southwest Research Station, General Technical Report PSW-GTR-l44. *http://www.fs.fed.us/psw/topics/wildlife/birdmon/landbird/*

Ralph, C. J., K. R. Hollinger and R. I. Frey. 2004. Redwood Sciences Laboratory and the Klamath Demographic Monitoring Network mist-netting station management procedures. U.S. Department of Agriculture, Forest Service Pacific Southwest Research Station Redwood Sciences Laboratory, Arcata, California. Copies available from Klamath Bird Observatory, PO Box 758, Ashland, Oregon, 97520.

RHJV (Riparian Habitat Joint Venture). 2004. Version 2.0. The riparian bird conservation plan: a strategy for reversing the decline of riparian associated birds in California. California Partners in Flight. *http://www.prbo.org/calpif/pdfs/riparian.v2.pdf*.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Martell, Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenburg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. Partners in Flight North American landbird conservation plan. Cornell Lab of Ornithology, Ithaca, New York.

Shuford, W. D. 1999. Status assessment and conservation plan for the black tern (*Chlidonias niger surinamensis*) in North America. U.S. Department of Interior, Fish and Wildlife Service, Denver, Colorado.

Stephens, J. L. and J. D. Alexander. 2008. Klamath Bird Observatory point count effort report: 2007 spring and fall effort summary. Klamath Bird Observatory, Ashland, Oregon.

Table 1a. List of Focal Species included in Partners in Flight Landbird Conservation Plans for coniferous forests of western Oregon and Washington (Altman 1999) and east-slope of Cascade Mountains in Oregon and Washington (Altman 2000) for which the Klamath Bird Observatory gathers distribution, abundance, or demographic information at constant effort mist netting stations in southern Oregon and northern California.

White-headed Woodpecker
Williamson's Sapsucker
Flammulated Owl
Olive-sided Flycatcher
Pygmy Nuthatch
Hermit Thrush
Chipping Sparrow

Table 1b. List of Partners in Flight Watch List and Stewardship Species occurring in the Pacific (5) and Intermountain West (9) Avifaunal Biomes for which the Klamath Bird Observatory gathers distribution, abundance, or demographic information at constant effort mist netting stations in southern Oregon and northern California [*Watch List Species; **Stewardship Species] (Rich et al. 2004).

White-headed Woodpecker*
Red-breasted Sapsucker**
Williamson's Sapsucker**
Flammulated Owl*
Calliope Hummingbird*
Rufous Hummingbird*
Pacific-slope (Western) Flycatcher**
Willow Flycatcher*
Dusky Flycatcher**
Gray Flycatcher**
Steller's Jay**
Western Scrub-Jay**
Winter Wren**
Chestnut-backed Chickadee**
Oak Titmouse*
Varied Thrush**
Wrentit*
Hermit Warbler*
Black-throated Gray Warbler**
Green-tailed Towhee**
Fox Sparrow**
Golden-crowned Sparrow**
Cassin's Finch**

Table 2. List of 2007 Klamath Bird Observatory constant effort monitoring station (CES), rapid ornithological inventory (ROI), and public demonstration (demo) sites by station code, ownership, and location [USFS = U.S. Department of Agriculture U.S. Forest Service; BLM = U.S. Department of Interior Bureau of Land Management; USFWS = U.S. Department of Interior U.S. Fish and Wildlife Service; NPS = U.S. Department of Interior National Park Service.

| Station Name | Code | Ownership | Latitude | Longitude | Location |
|---|---|---|---|---|---|
| Sevenmile Guardhouse CES | 7MIL | USFS, Winema NF | 42º 42' 18" | 122º 04' 26" | Sevenmile Creek, Winema NF, 6 miles W Fort Klamath, Klamath Co., Oregon |
| Antelope Creek ROI | ANT1 | USFS, Klamath NF | 41º 29' 32" | 121º 56' 21" | Antelope Creek, 7 miles SSW of Tennant, Siskiyou Co., California |
| Applegate River CES | APRI | BLM, Medford District | 42º 17' 38" | 123º 14' 09" | Applegate River, BLM Provolt Seed Orchard, 1 mile NW Provolt, Josephine Co., Oregon |
| Ashland Watershed CES | ASWA | USFS, Rogue River NF | 42º 06' 47" | 122º 39' 40" | Ashland Creek watershed, 10.9 miles SE Ashland, Oregon |
| Rocky Point Cabin CES | CABN | USFWS, Upper Klamath Lake NWR | 42º 29' 49" | 122º 04' 47" | Rocky Point, Pelican Bay, 23.0 miles NW of Klamath Falls, Klamath Co., Oregon |
| Gerber Reservoir CES | GERB | BLM, Lakeview District | 42º 10' 26" | 121º 01' 50" | Barnes Valley Creek, SE Gerber Resevoir, 15.5 miles S of Bly, Klamath Co., Oregon |
| Horse Creek Meadow CES | HCME | USFS, Rogue River NF | 42º 23' 00" | 123º 40' 00" | Horse Creek Meadow, 13.0 miles W of Merlin, Josephine Co., Oregon |
| Johnson Creek CES | JOHN | BLM, Ashland Resource Area | 42º 14' 53" | 122º 14' 02" | Johnson Creek, 19.2 miles ENE of Ashland, Klamath Co., Oregon |
| North Mountain Park CES | NMTP | City of Ashland | 42º 12' 08" | 122º 41' 51" | North Mountain Park, Ashland, Jackson Co., Oregon |
| Odessa Creek CES | ODES | USFS, Winema NF | 42º 25' 45" | 122º 03' 28" | Odessa Creek Campground, 19.6 miles NW of Klamath Falls, Klamath Co., Oregon |
| Oregon Caves CES | ORCA | NPS, Oregon Caves NM | 42º 05' 37" | 123º 23' 47" | Oregon Caves NM, 14.0 miles SE of Cave Junction, Josephine Co., Oregon |
| Quines Creek CES | QUIC | BLM, Medford District | 42º 44' 00" | 123º 16' 00" | Quines Creek, 15 miles SSE of Canyonville, Douglas Co., Oregon |
| Topsy Grade CES | TOPS | BLM, Lakeview District | 42º 01' 30" | 122º 06' 05" | Klamath River at Frain Ranch Campground, 10.2 miles NW of Dorris, CA, Klamath Co., Oregon |
| Veteran's Park demo | VET1 | City of Klamath Falls | 42º 13' 08" | 121º 47' 17" | Veteran's Park, north shore Lake Ewauna, Klamath Falls, Klamath Co., Oregon |
| Wildlife Images CES | WIIM | BLM, Medford District | 42º 29' 25" | 123º 28' 48" | Rogue River at Wildlife Images, 3.5 miles SW of Merlin, Josephine Co., Oregon |
| Williamson River CES | WILL | USFS, Winema NF | 42º 39' 22" | 121º 51' 08" | Williamson River Campground, 5.5 miles NNE of Chiloquin, Klamath Co., Oregon |
| Willow Wind CES | WIWI | Ashland School District | 42º 11' 59" | 122º 41' 26" | Willow Wind Community Learning Center, Ashland, Jackson Co., Oregon |
| Wood River Wetland CES | WOOD | BLM, Lakeview District | 42º 35' 12" | 121º 55' 48" | Wood River Wetland Area, Agency Lake, 3.3 miles W of Chiloquin, Klamath Co., Oregon |

Table 3a. 2007 effort summary of Klamath Bird Observatory's nine Eastside Cascades & Klamath Basin constant effort monitoring stations (CES), rapid ornithological inventory (ROI), and public demonstration stations by site operated during the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7MIL | Sevenmile Guard Station CES (USFS) | 10 | 54 | 404 | 19 | 477 | 15.8 | 23 | 597.0 | 35 | 47.70 | 5.40 | 0.80 |
| ANT1 | Antelope Creek ROI (USFS) | 3 | 4 | 267 | 4 | 275 | 12.7 | 9 | 140.0 | 18 | 91.7 | 1.3 | 2.0 |
| CABN | Rocky Point Cabin CES (USFWS) | 10 | 56 | 487 | 11 | 554 | 17.1 | 20 | 524.0 | 38 | 55.40 | 5.60 | 1.06 |
| GERB | Gerber Reservoir CES (BLM) | 10 | 37 | 110 | 2 | 149 | 8.2 | 20 | 499.0 | 27 | 14.90 | 3.70 | 0.30 |
| ODES | Odessa Creek Campground CES (USFS) | 10 | 44 | 204 | 11 | 259 | 11.6 | 21 | 495.5 | 39 | 25.90 | 4.40 | 0.52 |
| TOPS | Frain Ranch Campground CES (BLM) | 10 | 99 | 503 | 26 | 628 | 15.3 | 16 | 471.3 | 30 | 62.80 | 9.90 | 1.33 |
| VET1 | Veteran's Park public demonstration (KFP) | 1 | 1 | 18 | 1 | 20 | 6.0 | 0 | 16.7 | 3 | 20.00 | 1.00 | 1.20 |
| WILL | Williamson River Campground CES (USFS) | 10 | 62 | 217 | 10 | 289 | 11.1 | 19 | 540.0 | 25 | 28.90 | 6.20 | 0.54 |
| WOOD | Wood River Wetland CES (BLM) | 10 | 117 | 328 | 13 | 458 | 11.7 | 18 | 480.8 | 25 | 45.80 | 11.70 | 0.95 |
| **Eastside Cascades Range & Klamath Basin Totals** | | **54** | **474** | **2,538** | **97** | **3,109** | | **146** | **3,764.2** | **240** | | | |
| **Westside Cascades & Klamath Ranges Totals (Table 4*a*)** | | **80** | **461** | **1,879** | **151** | **2,491** | | **195** | **4,736.2** | **270** | | | |
| **Grand Totals** | | **134** | **935** | **4,417** | **248** | **5,600** | | **341** | **8,500.4** | **510** | | | |

Table 3b. 2007 effort summary of Klamath Bird Observatory's seven Eastside Cascades & Klamath Basin constant effort monitoring stations (CES), rapid ornithological inventory (ROI), and public demonstration stations by site during the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7MIL | Sevenmile Guard Station CES (USFS) | 8 | 22 | 688 | 11 | 721 | 11.8 | 14 | 397.7 | 35 | 90.13 | 2.75 | 1.81 |
| CABN | Rocky Point Cabin CES (USFWS) | 17 | 60 | 484 | 10 | 554 | 14.3 | 32 | 860.0 | 49 | 32.59 | 3.53 | 0.64 |
| GERB | Gerber Reservoir CES (BLM) | 5 | 16 | 134 | 10 | 160 | 8.6 | 8 | 200.0 | 12 | 32.00 | 3.20 | 0.80 |
| ODES | Odessa Creek Campground CES (USFS) | 6 | 19 | 160 | 6 | 185 | 12.2 | 12 | 269.4 | 16 | 30.83 | 3.17 | 0.69 |
| TOPS | Frain Ranch Campground CES (BLM) | 5 | 30 | 231 | 10 | 271 | 14.4 | 10 | 250.0 | 14 | 54.20 | 6.00 | 1.08 |
| WILL | Williamson River Campground CES (USFS) | 7 | 31 | 123 | 5 | 159 | 10.7 | 14 | 379.3 | 16 | 22.71 | 4.43 | 0.42 |
| WOOD | Wood River Wetland CES (BLM) | 6 | 27 | 266 | 3 | 296 | 12.7 | 12 | 298.6 | 18 | 49.33 | 4.50 | 0.99 |
| **Eastside Cascades Range & Klamath Basin Totals** | | **54** | **205** | **2,086** | **55** | **2,346** | | **102** | **2,655.0** | **160** | | | |
| **Westside Cascades & Klamath Ranges Totals (Table 4*b*)** | | **76** | **440** | **2,081** | **74** | **2,595** | | **143** | **3,606.5** | **196** | | | |
| **Grand Totals** | | **130** | **645** | **4,167** | **129** | **4,941** | | **245** | **6,261.4** | **356** | | | |

Table 3c. 2007 effort summary of Klamath Bird Observatory's nine Eastside Cascades & Klamath Basin constant effort monitoring stations (CES), rapid ornithological inventory (ROI), and public demonstration stations, by site, operated May-October. [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, USFS = U.S. Department of Agriculture Forest Service, USFWS = U.S. Department of Interior Fish and Wildlife Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION (Ownership) | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7MIL | Sevenmile Guard Station CES (USFS) | 18 | 76 | 1,092 | 30 | 1,198 | 13.8 | 37 | 994.7 | 70 | 66.6 | 4.2 | 1.2 |
| ANT1 | Antelope Creek ROI (USFS) | 3 | 4 | 267 | 4 | 275 | 12.7 | 9 | 140.0 | 18 | 91.7 | 1.3 | 2.0 |
| CABN | Rocky Point Cabin CES (USFWS) | 27 | 116 | 971 | 21 | 1,108 | 15.7 | 52 | 1,384.0 | 87 | 41.0 | 4.3 | 0.8 |
| GERB | Gerber Reservoir CES (BLM) | 15 | 53 | 244 | 12 | 309 | 8.4 | 28 | 699.0 | 39 | 20.6 | 3.5 | 0.4 |
| ODES | Odessa Creek Campground CES (USFS) | 16 | 63 | 364 | 17 | 444 | 11.9 | 33 | 764.9 | 55 | 27.8 | 3.9 | 0.6 |
| TOPS | Frain Ranch Campground CES (BLM) | 15 | 129 | 734 | 36 | 899 | 14.9 | 26 | 721.3 | 44 | 59.9 | 8.6 | 1.2 |
| VET1 | Veteran's Park public demonstration (KFP) | 1 | 1 | 18 | 1 | 20 | 6.0 | 0 | 16.7 | 3 | 20.0 | 1.0 | 1.2 |
| WILL | Williamson River Campground CES (USFS) | 17 | 93 | 340 | 15 | 448 | 10.9 | 33 | 919.3 | 41 | 26.4 | 5.5 | 0.5 |
| WOOD | Wood River Wetland CES (BLM) | 16 | 144 | 594 | 16 | 754 | 12.2 | 30 | 779.3 | 43 | 47.1 | 9.0 | 1.0 |
| **Eastside Cascades Range & Klamath Basin Totals** | | **128** | **679** | **4,624** | **152** | **5,455** | | **248** | **6,419.2** | **400** | | | |
| **Westside Cascades & Klamath Ranges Totals (Table 4c )** | | **149** | **901** | **3,960** | **225** | **5,086** | | **338** | **8,342.6** | **466** | | | |
| **Grand Totals** | | **277** | **1,580** | **8,584** | **377** | **10,541** | | **586** | **14,761.8** | **866** | | | |

Table 4a. 2007 effort summary of Klamath Bird Observatory's nine Westside Cascades & Klamath Ranges constant-effort monitoring stations (CES) by site for the breeding season (mid-May through late-August). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APRI | Applegate River CES (BLM) | 10 | 28 | 92 | 8 | 128 | 6.7 | 18 | 417.7 | 25 | 12.80 | 2.80 | 0.31 |
| ASWA | Ashland Watershed CES (USFS) | 10 | 43 | 308 | 17 | 368 | 11.3 | 20 | 463.8 | 25 | 36.80 | 4.30 | 0.79 |
| HCME | Horse Creek Meadow CES (USFS) | 10 | 65 | 249 | 18 | 332 | 12.4 | 20 | 250.0 | 19 | 33.2 | 6.5 | 1.33 |
| JOHN | Johnson Creek CES (BLM) | 9 | 49 | 250 | 7 | 306 | 10.7 | 18 | 540.0 | 26 | 34.00 | 5.44 | 0.57 |
| NMTP | North Mountain Park CES (ACP) | 10 | 29 | 121 | 8 | 158 | 8.1 | 21 | 460.3 | 29 | 15.8 | 2.9 | 0.34 |
| ORCA | Oregon Caves National Monument CES (NPS) | 9 | 22 | 108 | 9 | 139 | 6.3 | 18 | 449.0 | 23 | 15.4 | 2.4 | 0.31 |
| QUIC | Quines Creek CES (BLM) | 12 | 62 | 198 | 22 | 282 | 10.3 | 23 | 573.9 | 28 | 23.5 | 5.2 | 0.49 |
| WIIM | Wildlife Images CES (BLM) | 10 | 61 | 289 | 28 | 378 | 12.3 | 20 | 599.2 | 29 | 37.8 | 6.1 | 0.63 |
| WIWI | Willow Wind CES (ASD) | 11 | 45 | 144 | 14 | 203 | 9.9 | 23 | 605.2 | 35 | 18.5 | 4.1 | 0.34 |
| **Westside Cascades & Klamath Ranges Totals** | | **70** | **404** | **1,759** | **131** | **2,294** | | **181** | **4,359.1** | **239** | | | |
| **Eastside Cascades Range & Klamath Basin Totals (Table 3*a*)** | | **54** | **474** | **2,538** | **97** | **3,109** | | **146** | **3,764.2** | **240** | | | |
| **Grand Totals** | | **124** | **878** | **4,297** | **228** | **5,403** | | **327** | **8,123.3** | **479** | | | |

Table 4b. 2007 effort summary of Klamath Bird Observatory's nine Westside Cascades & Klamath Ranges constant effort monitoring stations (CES) by site for the fall migration season (late-August through late-October). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APRI | Applegate River CES (BLM) | 4 | 12 | 34 | 1 | 47 | 5.3 | 7 | 126.5 | 9 | 11.75 | 3.00 | 0.37 |
| ASWA | Ashland Watershed CES (USFS) | 5 | 15 | 156 | 5 | 176 | 8.8 | 9 | 230.0 | 12 | 35.20 | 3.00 | 0.77 |
| HCME | Horse Creek Meadow CES (USFS) | 6 | 22 | 187 | 4 | 213 | 11.0 | 12 | 142.6 | 16 | 35.5 | 3.7 | 1.49 |
| JOHN | Johnson Creek CES (BLM) | 6 | 14 | 230 | 4 | 248 | 11.8 | 12 | 360.0 | 14 | 41.33 | 2.33 | 0.69 |
| NMTP | North Mountain Park CES (ACP) | 8 | 24 | 127 | 6 | 157 | 9.3 | 14 | 335.0 | 21 | 19.6 | 3.0 | 0.47 |
| ORCA | Oregon Caves National Monument CES (NPS) | 5 | 8 | 52 | 0 | 60 | 5.6 | 10 | 230.0 | 13 | 12.0 | 1.6 | 0.26 |
| QUIC | Quines Creek CES (BLM) | 12 | 63 | 249 | 12 | 324 | 11.8 | 24 | 579.8 | 30 | 27.0 | 5.3 | 0.56 |
| WIIM | Wildlife Images CES (BLM) | 17 | 209 | 658 | 26 | 893 | 13.0 | 33 | 993.8 | 45 | 52.5 | 12.3 | 0.90 |
| WIWI | Willow Wind CES (ASD) | 10 | 61 | 32 | 14 | 417 | 11.8 | 16 | 467.6 | 27 | 41.7 | 6.1 | 0.89 |
| **Westside Cascades & Klamath Ranges Totals** | | **73** | **428** | **1,725** | **72** | **2,535** | | **137** | **3,465.4** | **187** | | | |
| **Eastside Cascades Range & Klamath Basin Totals (Table 3*b*)** | | **54** | **205** | **2,086** | **55** | **2,346** | | **102** | **2,655.0** | **160** | | | |
| **Grand Totals** | | **127** | **633** | **3,811** | **127** | **4,881** | | **239** | **6,120.3** | **347** | | | |

Table 4c. 2007 effort summary of Klamath Bird Observatory's nine Westside Cascades & Klamath Ranges constant-effort monitoring stations (CES) by site operated January-December. Totals for WIWI station include efforts outside the breeding and fall migration seasons (January through early-May & November through December). [STATION (BLM = U.S. Department of Interior Bureau of Land Management, ACP = City of Ashland Department of Parks and Recreation, ASD = Ashland School District, KFP = City of Klamath Falls Parks Department, NPS = U.S. Department of Interior National Park Service, USFS = U.S. Department of Agriculture Forest Service); EFFORTS = number of visits to each site; RECAP, NEW, UNBANDED and TOTAL = number of previously banded birds, newly banded birds, birds released without being banded, and total number of birds captured respectively; AVERAGE SPECIES RICHNESS = average number of species captured each day; SURVEYS = number of 20-minute area search surveys conducted; NET HOURS = number of 12 m nets operated x time operated in hours; PERSON DAYS = number of person days spent; AVERAGE DAILY CAPTURES = average total captures per day; AVERAGE DAILY RECAPS = average recaptures per day; CAPTURES PER NET HOUR = average of total captures per net hour]

| STATION CODE | STATION (Ownership) | EFFORTS | RECAP | NEW | UNBANDED | TOTAL | AVERAGE SPECIES RICHNESS | SURVEYS | NET HOURS | PERSON DAYS | AVERAGE DAILY CAPTURES | AVERAGE DAILY RECAPS | CAPTURES PER NET HOUR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| APRI | Applegate River CES (BLM) | 14 | 40 | 126 | 9 | 175 | 6.0 | 25 | 544.2 | 34 | 12.5 | 2.9 | 0.3 |
| ASWA | Ashland Watershed CES (USFS) | 15 | 58 | 464 | 22 | 544 | 10.5 | 29 | 693.8 | 37 | 36.3 | 3.9 | 0.8 |
| HCME | Horse Creek Meadow CES (USFS) | 16 | 87 | 436 | 22 | 545 | 11.7 | 32 | 392.6 | 35 | 34.1 | 5.4 | 1.4 |
| JOHN | Johnson Creek CES (BLM) | 15 | 63 | 480 | 11 | 554 | 11.3 | 30 | 900.0 | 40 | 36.9 | 4.2 | 0.6 |
| NMTP | North Mountain Park CES (ACP) | 18 | 53 | 248 | 14 | 315 | 8.7 | 35 | 795.3 | 50 | 18.2 | 3.9 | 0.4 |
| ORCA | Oregon Caves National Monument CES (NPS) | 14 | 30 | 160 | 9 | 199 | 6.0 | 28 | 679.0 | 36 | 14.2 | 2.1 | 0.3 |
| QUIC | Quines Creek CES (BLM) | 24 | 125 | 447 | 34 | 606 | 11.0 | 47 | 1,153.8 | 58 | 25.3 | 5.2 | 0.5 |
| WIIM | Wildlife Images CES (BLM) | 27 | 270 | 947 | 54 | 1,271 | 12.7 | 53 | 1,593.0 | 74 | 47.1 | 10.0 | 0.8 |
| WIWI | Willow Wind CES (ASD) | 38 | 203 | 749 | 53 | 1,005 | 10.2 | 64 | 1,728.5 | 113 | 26.4 | 5.3 | 0.6 |
| **Westside Cascades & Klamath Ranges Totals** | | **152** | **929** | **4,057** | **228** | **5,214** | | **343** | **8,480.2** | **477** | | | |
| **Eastside Cascades Range & Klamath Basin Totals (Table 3*c*)** | | **128** | **679** | **4,624** | **152** | **5,455** | | **248** | **6,419.2** | **400** | | | |
| **Grand Totals** | | **280** | **1,608** | **8,681** | **380** | **10,669** | | **591** | **14,899.3** | **877** | | | |

Table 5. Klamath Bird Observatory 2007 Black Tern nest colony survey effort summary by area. All Black Tern observations during route surveys were recorded (at and between points) and all bird species encountered during the route effort were recorded separately on a Species Checklist. [Visit = number of visits; Survey Stations = number of survey points in route; Total Surveys = number of point surveys completed within a route during all visits; Maximum Count = maximum count of Black Terns encountered on a single survey route visit; Breeding Status = the determined status of at least one breeding colony (Y = active , N = not active, P = possibly active), Observation Type = observed behavior used to determine breeding colony status (NF = nest found, NB = nesting behavior, V = vocalizing, D = diving, W = flying, J = juvenile, O = other)]

| Area / Survey Route | Visits | Survey Stations | Total Surveys | Maximum Count | Total Count | Breeding Status | Observation Type | Note |
|---|---|---|---|---|---|---|---|---|
| Crystal Springs | | | | | | | | |
| CRCS | 2 | 5 | 10 | 11 | 20 | Y | V | |
| CRCN | 2 | 9 | 18 | 8 | 11 | Y | V | |
| CRSP | 3 | 8 | 24 | 25 | 43 | Y | V | |
| Eagle Point | | | | | | | | |
| EAGL | 4 | 5 | 20 | 84 | 148 | P | F | |
| Klamath Marsh | | | | | | | | |
| KLMA | 3 | 7 | 21 | 0 | 0 | N | n/a | |
| KLEA | 3 | 7 | 19 | 9 | 9 | N | W | Unable to reach 3 points third visit |
| Malone Springs | | | | | | | | |
| MSNC | 2 | 7 | 13 | 26 | 45 | Y | NB | Unable to reach two points second visit |
| MSWE | 2 | 6 | 10 | 30 | 44 | Y | V | Unable to reach one point second visit |
| Northwest edge of Upper Klamath Lake | | | | | | | | |
| EAUK | 1 | 7 | 7 | 5 | 5 | P | F | |
| SEUK | 1 | 7 | 7 | 13 | 13 | P | F | |
| UKCS | 4 | 11 | 32 | 68 | 199 | P | F | 4 points third visit; 6 points fourth visit |
| Odessa Marsh | | | | | | | | |
| ODCR | 1 | 9 | 9 | 3 | 3 | P | F | |
| ODMA | 1 | 12 | 12 | 33 | 33 | P | F | |
| ODSP | 1 | 9 | 9 | 25 | 25 | P | D | |
| Pelican Bay | | | | | | | | |
| PECU | 2 | 7 | 14 | 25 | 48 | P | D | |
| PBSO | 2 | 5 | 9 | 25 | 30 | P | F | |
| RPCU | 2 | 8 | 12 | 32 | 55 | Y | V | 4 points second visit |
| Recreation Creek | | | | | | | | |
| RCRW | 2 | 10 | 16 | 73 | 99 | P | D | Unable to reach four points second visit |
| RCRN | 3 | 7 | 17 | 40 | 69 | P | D | Unable to reach 2 points 2nd and 3rd visits |
| RCRS | 4 | 8 | 27 | 60 | 132 | P | D | Unable to reach 4 points third visit |
| Wocus Cut | | | | | | | | |
| UKCM | 4 | 7 | 28 | 56 | 147 | P | F | |
| UKCN | 2 | 6 | 12 | 43 | 63 | P | F | |
| WOCN | 4 | 4 | 16 | 43 | 97 | Y | V | |
| WOCS | 4 | 5 | 16 | 59 | 94 | P | D | Unable to reach 4 points last visit |
| Wood River Wetland | | | | | | | | |
| WORI | 3 | 8 | 24 | 1 | 1 | N | W | |
| **TOTAL** | **62** | **184** | **402** | | **1433** | | | |